

### ABSTRACT OF THE DISCLOSURE

A heat treatment apparatus of the present invention includes a reaction tube, an exhaust unit for reducing the pressure in the reaction tube, a unit for introducing gas for heating or cooling a subject substrate disposed in the reaction tube, a light source for heating the subject substrate disposed in the reaction tube, and a unit for switching on/off the light source in a pulse form. Furthermore, the subject substrate is heated by a light source, using a first unit for heating the subject substrate by switching on/off the light source in a pulse form with a cycle of one second or shorter, and a second unit for heating the subject substrate by switching on/off the light source in a pulse form with a cycle of one second or longer.